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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/503,170	02/14/2000	Kenji Hashimoto	04329.2230	6174
22852	7590	03/10/2004	EXAMINER	
FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER LLP 1300 I STREET, NW WASHINGTON, DC 20005			DAVIS, ROBERT B	
			ART UNIT	PAPER NUMBER
			1722	

DATE MAILED: 03/10/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AS

<b>Office Action Summary</b>	<b>Application No.</b> 09/503,170	<b>Applicant(s)</b> HASHIMOTO, KENJI	
	<b>Examiner</b> Robert B. Davis	<b>Art Unit</b> 1722	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 23 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-4, 8-11, 15, 18, 22, 23, 25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) 15 and 18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-11, 22, 23, 25 and 26 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 February 2000 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 12, 2004 has been entered.

### ***Election/Restrictions***

2. Claims 15 and 18 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 01/28/02.

### ***Drawings***

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "11" has been used to designate both chip and conveying section in the drawings and in the specification. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

### ***Specification***

4. The disclosure is objected to because of the following informalities:

The chip and the conveying section in the background of the invention have been identified with the same reference numeral (11).

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-4, 8-11, 22, 23, 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (see figures 1, 2 and 3a-3d, and page 2, line 10 to line 10 of page 6 of the instant application) taken together with Lin et al (5,587,342: figures 3 and 5).

The admitted prior art discloses a retaining section (12) for supporting a semiconductor device, a mask (13) set on the semiconductor device, the mask having openings (14) corresponding to the portion of the semiconductor device to be coated, an extruding section (2) for extruding a fluidizing resin (1), a first drive section (4) which drives the extruding section, a squeegee (16) which causes movement of the fluidizing resin over the openings (14) as illustrated in figures 3b-3d, and a second drive section (18) for driving the squeegee which is independent from the first drive. The admitted

prior art does not disclose that the extruding section is configured to extrude a fluidizing resin into the openings of the mask; however, the extruding section is capable of extruding into the openings of the mask by merely modifying the placement of the extruding section during the extruding step.

Lin et al disclose a retaining means for a semiconductor device (10), a means for forming a drop of material in a hole in a mask (15) as disclosed in lines 1-9 of column 4, and a squeegee (40) for removing excess material. The means to move the drop supplying device and the squeegee are inherent as required for operability of the apparatus. This reference teaches both the extrusion of the material directly into the openings of the mask as shown in figure 5 and feeding of the material onto the top of the mask as shown in figure 2.

It would have been obvious at the time of the invention to one of ordinary skill in the art to modify the apparatus of the admitted prior art by using an extruding section which extrudes material directly into the openings of the mask as disclosed by Lin et al for the purpose of providing an encapsulation step which requires less material to be moved across the top of the mask and reduces the energy and time removing excess material during the step of moving the squeegee across the opening in the mask. It is clear that extruding the material directly into the openings of the mask prevents extruded material from sticking to undesirable places and that extrusion of the material directly into the mask openings enhances the performance of the apparatus.

The amendment to the claims to specify that the retaining section retains the carrier instead of the chip does not change the rejection it is clear that the admitted prior

art discloses a chip (11) retained by a carrier substrate. This is also intended use of the apparatus and immaterial to the issues of patentability of the apparatus.

### ***Response to Arguments***

7. Applicant's arguments filed 1/12/2004 have been fully considered but they are not persuasive. Applicant argues that there is no motivation to combine the admitted prior art and Lin et al (5,587,342) and that there would have been no reasonable expectation of success in combining the admitted prior art and Lin et al. The examiner respectfully disagrees as detailed below. Applicant states the following reason for the lack of motivation and reasonable success in combining the references, in that the admitted prior art teaches an apparatus which encapsulates a chip by extruding resin adjacent an opening in a mask and then using a squeegee to extrude the resin into the opening in the mask and that Lin et al extrudes material directly into the openings of a mask that is formed from a photo-resist layer. The arguments also point out that the photo-resist layer is later removed and that the references differ fundamentally in the method and apparatus for masking a chip and dispensing materials onto a semiconductor chip. The arguments also point out that the admitted prior art discloses a separate mask that can be relocated and that Lin et al disclose a stationary mask that is later removed.

The examiner would like to point out that the claims under consideration are apparatus claims and any reference to a varying method is irrelevant. The operation of the devices of the admitted prior art and the Lin et al reference by the applicant are correct and the reason why the examiner made an obviousness rejection instead of an

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anticipation rejection. The Lin et al reference clearly teaches direct extrusion of an encapsulant into the openings of a mask and then removing the tail of the dots (shown in figure 5) with a squeegee. The benefits of this type of extrusion are clear to one of ordinary skill in the art over the method of extruding directly onto the mask and then using a squeegee to extrude the material into openings of the mask. The direct extrusion of the encapsulant into the mask openings allows the tail of the dot to be moved by the squeegee as opposed to the entire encapsulant material as in the admitted prior art. It should be noted that the Lin et al reference also discloses extrusion of the material onto a mask and then using the squeegee to move the encapsulant into the openings, so even if direct extrusion into the mask openings is not seen as an improvement it is clearly an equivalent to extrusion onto the mask. One of ordinary skill in the art would readily consider the direct extrusion into the mask openings as a more streamlined manner of providing encapsulant and an equivalent to extrusion onto the mask. Both the admitted prior art and the Lin et al reference disclose using a mask for directing the encapsulant to the chips and the examiner does not consider that the different manner of placing the masks in correlation to the chips as a reason to doubt success of the combination.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert B. Davis whose telephone number is 571-272-1129. The examiner can normally be reached on Monday-Friday 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda L. Walker can be reached on 571-272-1151. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Robert B. Davis  
Primary Examiner  
Art Unit 1722

3/8/04